



MaxPac 8051 SRA 1/2 User Operations and Maintenance Guide





MaxPac 8051 SRA1/2

User Operation and Maintenance Guide

Operating and Maintaining Your MaxPac 8051 SRA1/2 Transportable Workstation

**Rugged Portable Computers, LLC
495 Production Avenue
Madison, AL 35758, USA**



Warranties and Liabilities

Rugged Portable Computers LLC (herein named "MaxVision") warrants that the Product, in the course of its normal use, will conform to MaxVision's specifications and be free from defects in material and workmanship for a period of twelve (12) months from the date of the original sale. Such warranty commences on the purchase date appearing on the invoice. The original end user is entitled to customer support through telecommunication during normal MaxVision business hours and email support to be responded to as support staff are available. Such support shall be limited to hardware operations and the software required operating such hardware. Upon written request and subject to the availability of MaxVision personnel, additional support may be provided by MaxVision in its sole discretion on a time and materials basis.

Limited Warranty for Software. MaxVision warrants to the original end user only that the Software as delivered at the time of purchase will perform in MaxVision hardware, and that the original diskettes or compact disks are free from defects in material and workmanship under normal use, for a period of thirty (30) days from the date of original sale, provided the Software is used with a MaxVision unit. MaxVision makes no warranty that the Software will work in combination with any hardware or software products provided by third parties, that the operation of the Software will be uninterrupted or error-free, or that all defects in the Software will be corrected. This limited warranty is void if failure of the Software has resulted from accident, abuse, or misapplication. MaxVision's entire liability and your sole and exclusive remedy shall be, at MaxVision's option, either to (a) correct or help you work around or avoid a reproducible Error or (b) replace defective diskettes or compact disks. Any replacement Software will be warranted for the remainder of the original Limited Software Warranty Period.

Limited Warranty for the Product. MaxVision warrants to the original end user only that all Products sold by MaxVision will be free from defects in material and workmanship and conform substantially to the applicable standards set forth in the Documentation, under normal use, for a period of 365 days from the date of original sale. This limited warranty is void if failure of the Product has resulted from accident, abuse, or misapplication. If MaxVision confirms a Product is defective after you have obtained a Return Materials Allowance Number for such Product and, at your expense, have returned the Product to MaxVision for inspection, MaxVision will, at its election, repair or replace such Product at no charge to you.

Replacement Product may be either new or remanufactured. In the event that the Product returned is not defective, you will be responsible for freight costs for return shipment to you. The foregoing warranty shall not apply to Product that has been (a) damaged by accident, Acts of God, shipment, improper installation, abnormal physical or electrical stress, misuse or misapplication, as determined by MaxVision in its sole reasonable discretion, or (b) modified without MaxVision's express written acceptance of such modification for warranty purposes. MaxVision reserves the right to charge additional fees for repairs or replacements performed outside the Warranty Period. Any replaced or repaired components, subassemblies or units as well as spare parts are warranted for thirty (30) days or the remainder of the original warranty period, whichever is longer. MaxVision shall not be responsible for any software, firmware, information or memory data of yours contained in, stored on, or integrated with any Products returned to MaxVision pursuant to any warranty under this Agreement.

Disclaimer of Warranties. EXCEPT AS SPECIFICALLY PROVIDED ABOVE, NEITHER MAXVISION NOR ITS LICENSORS OR SUPPLIERS PROVIDES ANY WARRANTY OF ANY KIND FOR THE SOFTWARE OR THE PRODUCT, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF THIRD PARTY RIGHTS. EXCEPT AS SET FORTH IN THIS AGREEMENT, THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE SOFTWARE AND THE PRODUCT IS WITH YOU. If a disclaimer of implied warranties is not permitted by law, the duration of any such implied warranty is limited to ninety (90) days from the date of purchase by the original end user. Some jurisdictions do not allow the exclusion of implied warranties or limitations on how long an implied warranty may last, so such limitations or exclusions may not apply to you. This limited warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

Liability Exclusions and Limitations. IN NO EVENT SHALL MAXVISION OR ITS LICENSORS OR SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING LOST PROFITS, LOSS OF USE OR INTERRUPTION OF BUSINESS), OR FOR LEGAL FEES, ARISING OUT OF THE USE OF THE SOFTWARE OR THE PRODUCT, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT PRODUCT LIABILITY OR OTHERWISE, EVEN IF MAXVISION OR ITS LICENSORS OR SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL COMPANY'S AGGREGATE LIABILITY HEREUNDER EXCEED THE PURCHASE PRICE PAID BY YOU. This limitation shall apply notwithstanding any failure or inability to provide the limited remedies set forth above. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you.

Proprietary Rights-Contracts with Certain U.S. Government Agencies. If the Software is acquired under the terms of a Department of Defense or civilian agency contract, the Software is "commercial item" as that term is defined at 48 C.F.R. 2.101 (Oct. 1995), consisting of "commercial computer software" and "commercial computer software documentation" as such terms are used in 48 C.F.R. 12.212 of the Federal Acquisition Regulations and its successors and 48 C.F.R. 227.7202-1 through 227.7202-4 (June 1995) of the DoD FAR Supplement and its successors. All U.S. Government end users acquire the Software with only those rights set forth in this Agreement.

Export Restrictions. You acknowledge that the laws and regulations of the United States restrict the export and re-export of certain commodities and technical data of United States origin, including the Product and the Software, in any medium. You agree that you will not knowingly, without prior authorization if required, export or re-export the Software or the Product in any medium without the appropriate United States and foreign government licenses.

Severability. You acknowledge and agree that each provision of this Agreement that provides for a disclaimer of warranties or an exclusion or limitation of damages represents an express allocation of risk, and is part of the consideration of this Agreement. Invalidity of any provision of this Agreement shall not affect the validity of the remaining provisions of this Agreement.

General. This Agreement is the entire agreement between you and MaxVision relative to the Product and the Software, and supersedes all prior written statements, proposals or agreements relative to its subject matter. It may be modified only by a writing executed by an authorized representative of MaxVision. No MaxVision reseller or sales representative is authorized to make any modifications, extensions or additions to this Agreement. This Agreement is governed by the laws of the State of Alabama without application of the principles of conflicts or choice of laws. The application of the United Nations Convention on Contracts for the International Sale of Goods to this Agreement is expressly excluded.

Copyright

The materials in this document are the copyrighted works of Rugged Portable Computers LLC, copyright © 2005-2006. All rights reserved. Email sales@maxvision.com for permission to duplicate and otherwise re-use.

Trademarks

MaxVision, Rugged Portable Computers LLC, and MaxPac are registered trademarks, and MaxPro and TeraPac are trademarks, of Rugged Portable Computers LLC. Microsoft and Windows are registered trademarks of Microsoft Corporation. Intel and Pentium are registered trademarks and Xeon is a registered trademark of Intel Corporation. Other trademarks and registered trademarks are the property of their respective owners.

Regulatory Approvals

EN60950, EN55024, EN55022, FCC, Part 15, EN61000-3-2 & EN61000-3-3.

Warnings

Changes or modifications to this device that are not approved by the party responsible for compliance could void the user's authority to operate the equipment.

To reduce the risk of electrical shock, do not attempt to open the device unless instructed to do so. Do not use any tool for purposes other than instructed.

A Lithium Ion battery is included with the system motherboard. This battery is used for the Real Time Clock (RTC) circuit. The expected lifetime of the battery is approximately 5 years. There is a danger of explosion if this battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the motherboard manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Contents

Legal and Related Information

Copyright	v
Trademarks	v
Regulatory Approvals	v
Warnings	v

Chapter 1: Quick Start Setup..... 1

Documentation Conventions	2
Inspecting the Shipment	2
Unpacking the System	3
ENERGYSTAR® Power Management Settings (Within the Operating System and the BIOS)	5
Setting-Up Your MaxPac	7
Powering-Up Your MaxPac	10
Registering/Activating Your OS	Error! Bookmark not defined.
Shutting Down the System	10
“Do’s and Don’ts”	10
Removable Hard Disk Drive(s)	11
Removable Optical Drive	12

Chapter 2: Setting-Up the Network, Graphics, and Displays..... 13

Setting-Up the Network	14
Setting-Up the Graphics	14
Adjusting the Displays	15

Chapter 3: Module Replacement/Upgrade Procedures 16

Introduction	17
Required Tools and Techniques	17
Names and Types of Screws	17
Motherboard Quick Reference	18
Removing the Displays	Error! Bookmark not defined.
Accessing the Inner Chassis	24
Memory	25
PCI Express Card	26
Riser Assembly	27
Main System Cooling Fans	29
Motherboard	Error! Bookmark not defined.

Appendix A: Creating and Using Backup Images (Including Restoring Your OS)..... 31

Introduction	31
--------------------	----

Appendix B: Regular System Maintenance 41

Cleaning Interior Dust	41
Maintaining (Cleaning) the "Baghdad Filter"	41
Resetting the Motherboard BIOS	43
Replacing the Lithium Battery	45

Appendix C: Screws and Required Tools 46

Screws	46
Required Tools	47

Appendix D: Contacting MaxVision Support (RMA and Serial Numbers) 48

Repairing/Replacing Products/Accessories	48
Contacting Technical Support and RMA Numbers	48

Chapter 1: Quick Start Setup

Documentation Conventions

Icons



- ❑ The information icon is used to annotate important information.



- ❑ The exclamation icon is used to annotate cautionary information.

Fonts

- ❑ *Italics* font is used for emphasis, book titles, commands, and path and file names.
- ❑ **Bold** may be used to emphasize text, highlight menu items, and denote the titles of dialog boxes.
- ❑ **Menu > Command** identifies the path used to select a menu command.
- ❑ `Courier` font is used for program listings and for any text messages that the software displays on the screen.
- ❑ **Note:** describes important information, warnings, or unique commands.
- ❑ “Select” means click the left mouse button on the indicated item.
- ❑ “Click-left” (or just “click”) means click the left mouse button on the indicated item.
- ❑ “Click-middle” means click the middle mouse button on the indicated item.
- ❑ “Click-right” means click the right mouse button on the indicated item.
- ❑ “Double-click” means click twice consecutively with the left mouse button.
- ❑ “Drag-left” (or just “drag”) means press and hold the left mouse button on the indicated item, then move the cursor (pointer) to the destination and release the button.
- ❑ “Shift-click-left” means press and hold the <Shift> key then click the left mouse button on the indicated item.
- ❑ “Ctrl-click-left” means press and hold the <Ctrl> key then click the left mouse button on the indicated item.

Inspecting the Shipment

MaxPac systems are packaged to withstand the roughest of treatment during shipping. Any boxes, foam core padding, and anti-static bags should be stored safely away in case you need to ship the system for any reason in the future. Inspect the box the system arrived in. If there is any unusual

damage to the box, make note of the damage on the delivery form and contact MaxVision support (see *Appendix D* for more details).

Unpacking the System



MaxPac 8051 systems are usually shipped in an associated Explorer case. Depending on the configuration of your system – one or two displays and one or two disk drives – the Case/MaxPac combination weighs between 38 and 43 lbs (60-65 lbs including the Explorer case). If you are unable to lift this weight safely, you should obtain assistance in unpacking and moving the system.

- 1) Place the Explorer case and MaxPac system on the floor. Remove the packing slip from the outside of the case and save it for later use as discussed below.
- 2) Clear an area on a desk or table on which to place the MaxPac system.



Note: In order to raise or lower the handle on the Explorer case, use your thumb to slide the release catch to the right (if looking toward the back of the case as shown in Figure 1-1).



Figure 1-1. Use the release catch to operate the handle on the Explorer case

- 3) Place the Explorer case flat on its back on the floor and open it (Figure 1-2).



Figure 1-2



Figure 1-3

Figure 1-2. Open the Explorer case containing the MaxPac System

- 4) Carefully tip the case such that its lid is on the floor as shown in Figure 1-3 (note that the case was rotated 180° from the view shown in Figure 1-2 prior to it being tipped for the purposes of these photographs).
- 5) Carefully slide the MaxPac out of the case (Figure 1-4).



Note: This process can be GREATLY facilitated by taking hold of the handle on top of the Explorer case and tilting the case forward towards the lid resting on the floor. This will cause the MaxPac to gently slide out of the case.



Figure 1-4



Figure 1-5

- 6) Observe that the keyboard, mouse, power cord, and documentation package are located in the Explorer case under the system (Figure 1-5).
- 7) Keeping your back straight, bending at the knees, and using your legs as much as possible, lift the MaxPac system and place it on the cleared area noted in point (2) above and illustrated in Figure 1-6 below.
- 8) Check the packing slip to ensure that everything is as you expect with regard to the main system. Pay particular attention to any special options you may have requested, such as number of disk drives, memory upgrades, and custom graphics subsystems.
- 9) Check the contents of the envelope containing the documentation associated with your system. In addition to this manual – and also any user guides and manuals associated with special upgrade options you may have ordered (such as graphics cards) – a basic MacPac 8051 documentation pack will include:
 - ☐ Windows and CD-ROM.
 - ☐ Motherboard CD and/or manual.
 - ☐ This document.
 - ☐ Recovery DVD (see also *Appendix A*).



ENERGYSTAR® Power Management Settings (Within the Operating System and the BIOS)

MaxPac S-Class 8051 SRA1 (Single Screen) systems are ENERGYSTAR® (<http://www.energystar.gov>) certified and have power saving settings enabled by default. These settings are recommended for optimal energy savings. The benefits for using these settings are not only financial but environmental as well. The following table illustrates the financial benefits over the lifetime of the workstation:

How Your Computers are Used	Estimated Lifetime (4 yrs) Savings per Desktop Computer	
	If you pay \$.11 per kWh	If you pay \$.18 per kWh
We typically leave our computers on nights & weekends	\$88	\$144
We typically turn our computers off every night	\$24	\$40
We will activate power management settings on the new computers, but did not do so on the old computers	\$216	\$352

For a more specific calculation to your own configuration, use ENERGYSTAR's® Equipment Savings Calculator by following the link. Additionally, see the same link for information on the benefits and business cases for ENERGYSTAR® compliance:

http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_low_carbon

In order to meet ENERGYSTAR® requirements, your MaxPac 8051 SRA1 system was shipped with the following settings configured:

- 1) To enter the BIOS, press the **Del** key while the unit is booting. Once in the BIOS, under the **Advance** menu, select the **ACPI Settings** menu (Figure 1-6). The **ACPI Sleep State** is set to **S3 (Suspend to RAM)**. (Figure 1-7)



Figure 1-6

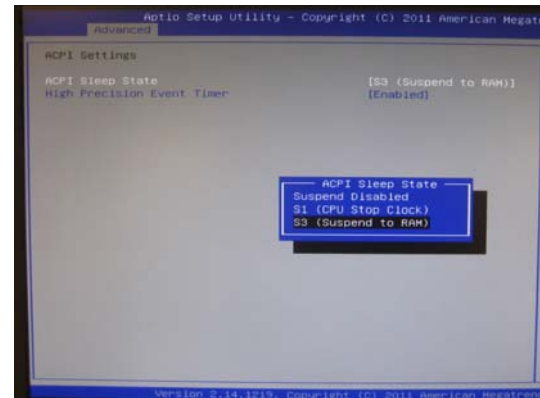


Figure 1-7

- 2) Under the **Advance** menu, in the **CPU Configuration**, select the **CPU Power Management Configuration**. The **Power Technology** option is set to **Energy Efficient** (Figure 1-8). Then, still in the same menu, the **Energy/Performance Bias** is set to **Energy Efficient**. (Figure 1-9)

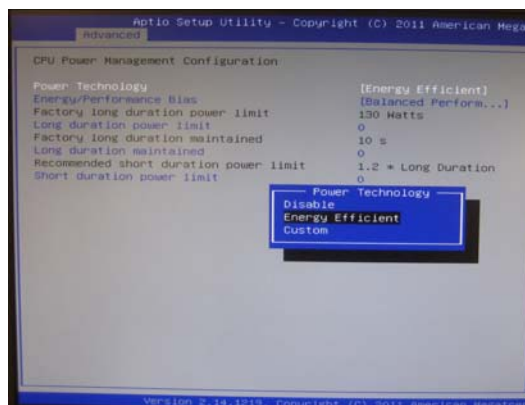


Figure 1-8

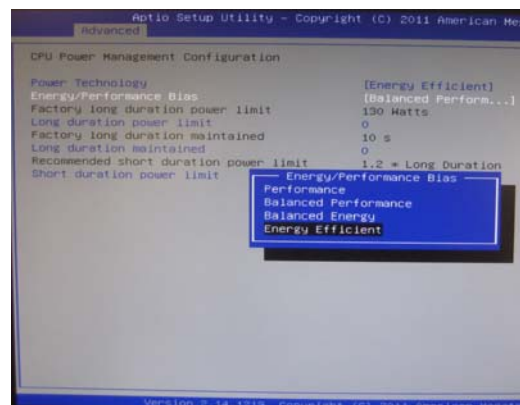


Figure 1-9

- 3) Within the operating system, there are also some power saving settings that were enabled by default. These screen shots are examples of these settings in Windows 7. In the **Device Manager** (Control Panel → All Control Panel Items → System → Device Manager) double click one of the Gigabit network adapters to bring up the properties page (Figure 1-10). In the **Power Management** tab, the following three check boxes are checked: **Allow the computer to turn off this device to save power**, **Allow this device to wake the computer**, **Only allow a magic packet to wake the computer**. (Figure 1-11)

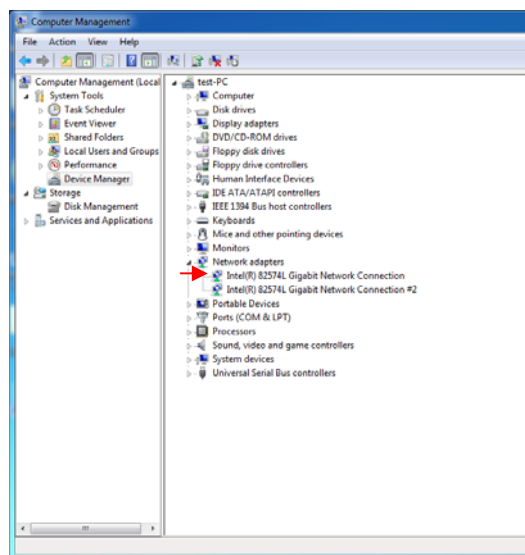


Figure 1-10

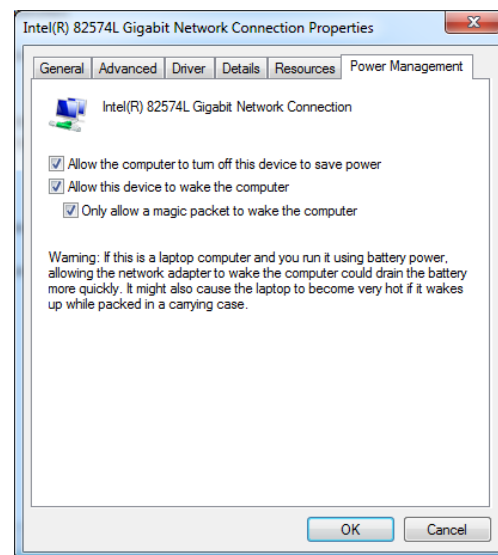


Figure 1-11

- 4) Then in the **Power Options** in the **Control Panel**, a list of power plans are listed (Figure 1-12). Under the **Power Saver** plan, select **Change plan settings**. The **Turn off the display** is set to 15 minutes, and the **Put the computer to sleep** is set to 30 minutes. (Figure 1-13)

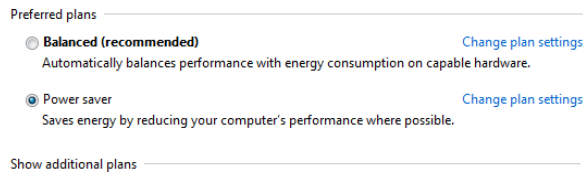


Figure 1-12

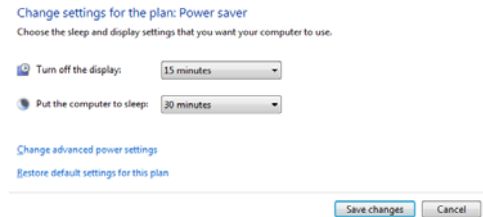


Figure 1-13

- 5) When the system has entered sleep mode, to wake the computer, press a key on the keyboard or press the power button as if turning the system on.
- 6) If you have any further questions regarding ENERGYSTAR® certifications of MaxVision products, please contact Technical Support as described in Appendix D.

Setting-Up Your MaxPac

Location

Your MaxPac 8051 system needs to be positioned in a location with the capacity to safely support at least 38 to 43 lbs depending on its configuration. The unit should be unobstructed so as to permit the free flow of cooling air in through the intake filter and out via the exhaust vents.

Power Requirements

MaxPac 8051 power supplies are auto-sensing 100 to 240 VAC, 50 to 60 Hz units. Ensure that the supplied power is sufficient, stable, and without spikes or surges for operation of your MaxPac and other required equipment.

Tilting the System

- 1) Place one hand underneath the system and the other hand on top of the system (Figure 1-15). Press down lightly with the hand on top of the system while gently pulling the bottom of the system forward with your other hand.



Figure 1-14



Figure 1-15

Accessing and Connecting the Keyboard, Mouse, etc.

- 1) Remove the keyboard, mouse, and power cord from the Explorer case (Figure 1-16) and place these items on the table in front of the system.



Figure 1-16



Figure 1-17

- 2) Plug the keyboard into the PS2 connector in the lower right-hand corner of the main interface panel, which is on the right-hand side of the system (Figure 1-17).

Note: Both the mouse and keyboard may be USB, and can be installed to any of the USB ports circled in red in Figure 1-18.



Figure 1-18



Figure 1-19

- 3) Plug the power cord into the main power input port, which is located on the left-hand side of the system, and then plug the other end of the cable into a suitable power outlet. Observe the soft power switch located underneath the power input port (Figure 1-19).

Opening the Displays (For Dual Displays)

- 1) In the case of a dual-display system, undo the knurled knob located at the lower left-hand side of the system (Figure 1-20).



Figure 1-20



Figure 1-21

- 2) Pull the second display away from the system as illustrated in Figure 1-21 (unfold this second display completely).

Powering-Up Your MaxPac

- 1) Press and release the soft power switch located to the left of the main power input connector as illustrated in Figure 1-22.



Figure 1-22

- 2) Due to extensive system initialization and verification checks, the BIOS boot-up process can take a significant amount of time, especially in the case of systems with large amounts of memory. In the case of a system containing 8 GB of RAM, for example, it can take 45 seconds before all three LEDs above the numerical keypad on the keyboard flash to indicate that the system is at a point where information should start to appear on the main display.



Note: If nothing appears on the main display, the fact that the three LEDs flash on the keyboard indicate that the system is alive.

Shutting Down the System

In order to shut the system down gracefully you must perform the following steps:

- 7) Close down any applications that are currently running.
- 8) Use the **Start > Shut Down** command.
- 9) Select one of the following options in the pull-down menu:
 - **Restart** Shutdown and restart the system.
 - **Shutdown** Shutdown the system.
 - **Log Off** Log off the current user session.
- 10) Click the **OK** button.

“Do’s and Don’ts”



- 1) Always disconnect the external AC power source when removing or installing system components.



- 2) In the case of extreme dust conditions, it is imperative that you use (and maintain) the oil-based "Desert Filter" supplied with your system (see also the discussions on maintaining this filter as presented later in this manual).

Removable Hard Disk Drive(s)



Note: If you are removing both drives for any reason (safe storage, for example), it is important to replace the drives in their original slots, because the system expects to boot from the drive containing the operating system.

- 1) Remove all four knurled knobs associated with the hard disk drives (Figure 1-27) and then remove the protective/securing plate.



Figure 1-27



Figure 1-28

- 2) Using the holes in the front of the drive(s), gently pull the drive(s) to be removed away from the inner chassis as illustrated in Figure 1-28.
- 3) You may wish to remove a hard drive (a) for security and safe storage or (b) due to a failed unit. In either case, when it comes to replacing the drive, perform the steps described above in reverse order.
- 4) To remove the 2.5" Hard Disk Drive, unscrew the two knurled knobs associated with the hard disk drive with a #1 phillips head screw driver. Then pull the drive out. (Figures 1-29 and 1-30)



Figure 1-29



Figure 1-30

Removable Optical Drive

- 1) Unscrew the two knurled knobs associated with the optical drive using a Phillips head #1 screwdriver (Figure 1-31) and then remove the optical drive (Figure 1-32).



Figure 1-31



Figure 1-32

Chapter 2: Setting-Up the Network, Graphics, and Displays

Setting-Up the Network

In the majority of environments, it is sufficient to use the Windows XP defaults for the network. Simply plug your network cable into one of the two Gigabit connectors (Figure 2-1); the system should auto-detect the presence of the network and the data/communications light next to the network cable connector should start to flash.



Figure 2-1. Connecting the network cable

The easiest way to test your network connection is to invoke your web browser and visit a website such as **www.MaxVision.com**. In the event of any problems or special requirements, you should first consult your on-site IT representative (if the problems persist, contact MaxVision support as discussed in *Appendix D*).

Setting-Up the Graphics

Irrespective of the configuration, the graphics on your system will have been custom pre-configured to suite your particular requirements.

If you do have a special graphics card, you should consult the manual associated with this card (this manual will be included in your documentation package as discussed in *Chapter 1*) or contact MaxVision support (as discussed in *Appendix D*) for more information.

Adjusting the Displays

In the case of a dual-display configuration, each display has a set of controls mounted on the top of the screen (Figure 2-2). By comparison, In the case of single-display configuration, these controls are mounted on the right side of the system.



Figure 2-2

Look carefully at the controls shown in Figure 2-2, for example. Observe the power button located to the right of the power light-emitting diode (LED). This is an independent power button for the display.

Pressing the **MENU/SEL** button will bring up a series of items on the screen. Use the +/- buttons to move between these items; press and release the **MENU/SEL** button to select that item; use the +/- buttons to vary the settings; and then press and release the **MENU/SEL** button to accept the new settings.



Chapter 3: Module Replacement/Upgrade Procedures

Introduction

The instructions in this chapter describe how to replace and upgrade various modules in your MaxPac system.



Note: Generally speaking, you should only access the MaxPac internals under the direction of MaxVision support. In some cases, performing unauthorized procedures or using components that have not been tested and approved by MaxVision may invalidate your warranty.



Note: Power-down your MaxPac system (shut down Windows®) and then remove the power cable before performing any of the procedures discussed in this chapter. Also please be aware of static discharge when working on your MaxPac. In general, touch the metal part of the chassis to discharge any static prior to handling any delicate electronic parts.



Note: When accessing the system internals and/or performing module upgrade procedures, you are quickly going to end up with a lot of screws and other small items. In order to keep track of things and to prevent misplacing any parts, it is strongly recommended to have a plastic container divided into small compartments and to label these compartments as you work.

Required Tools and Techniques

Most of the module replacement and upgrade procedures discussed in this chapter can be performed using only a pair of #1 (small tip) and #2 (regular tip) Phillips screwdrivers. However, some procedures will require additional tools as discussed in *Appendix C*.



Note: It is extremely important that you use only high-quality tools so as to avoid any slippage and stripping of screw heads and threads. Furthermore, in order to avoid any slippage, it is VERY important to apply adequate force in the form of **firm and steady pressure**. See *Appendix C* for details on the tools required to service the system.



Note: It is highly recommended that you use magnetized screwdrivers so as to prevent screws from dropping inside the case and/or aiding in retrieving them if they do drop inside the case. (If your screwdriver isn't already magnetized, you can make it so by repeatedly "stroking" the blade with a permanent magnet.

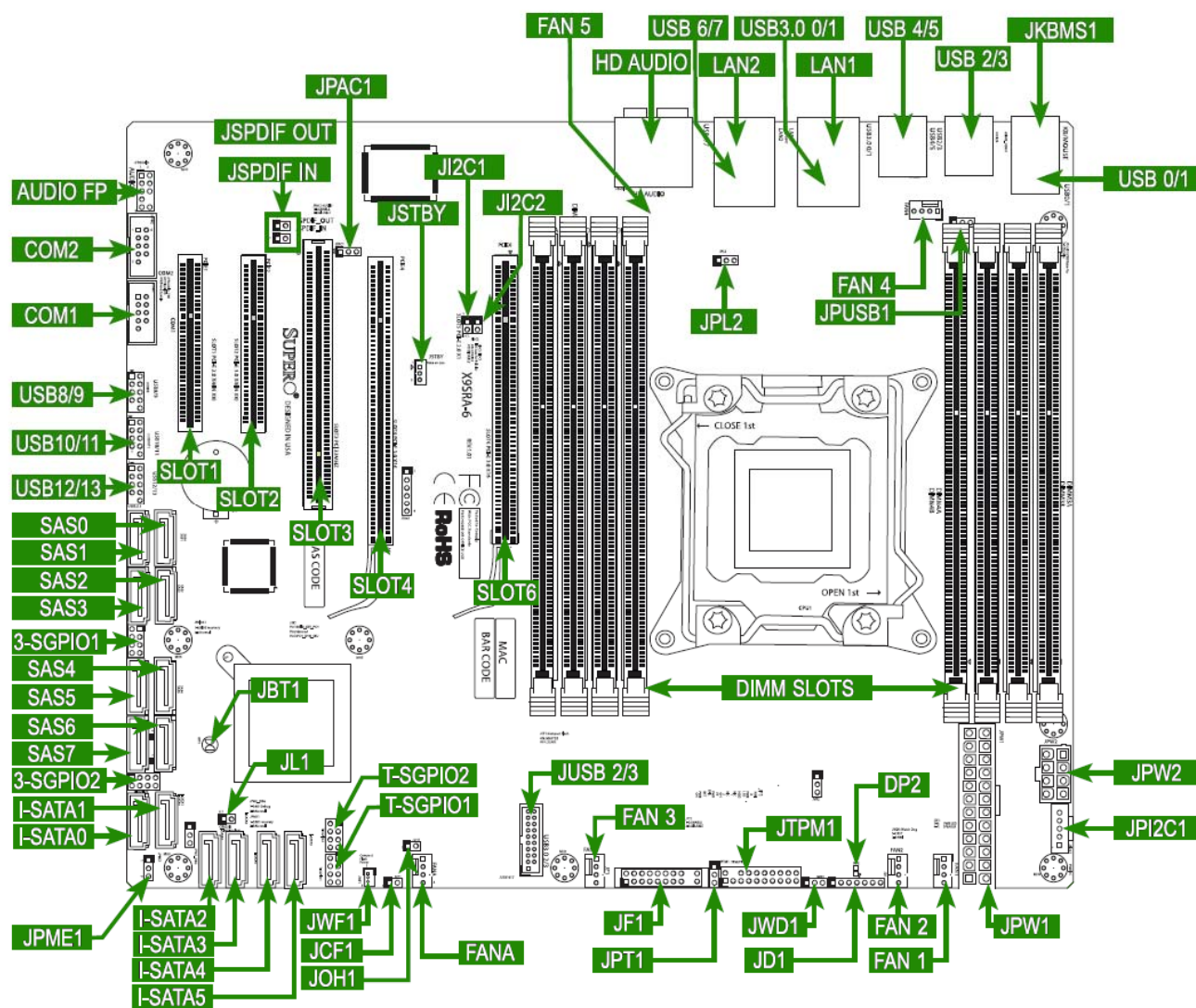


Note: For additional immunity to vibration, all screws in a MaxPac 8051 system are secured with removable blue LOCTITE. If you remove any screws, then you should reapply LOCTITE prior to replacing those screws.

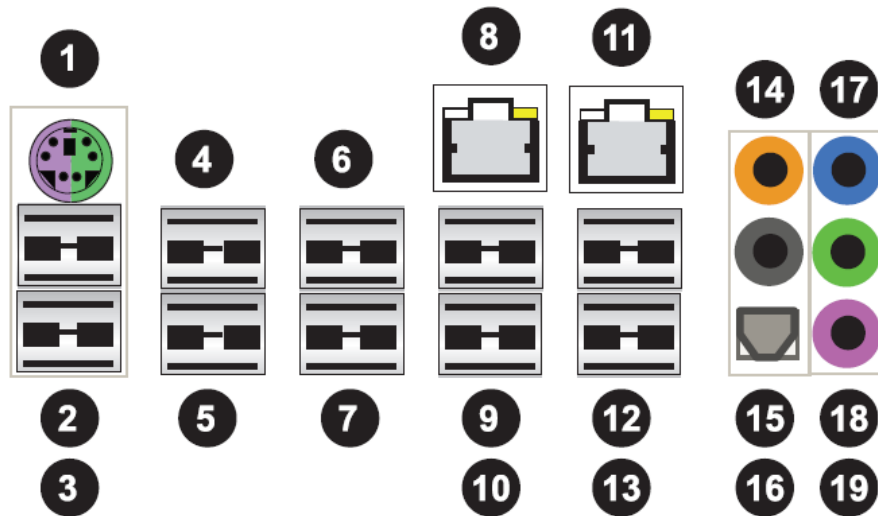
Names and Types of Screws

MaxPac S-Class systems use a variety of different screw types. In order to help you follow the instructions in this chapter, details on these screws are provided in *Appendix C*.

Motherboard Quick Reference



Motherboard I/O



1. Keyboard/Mouse	7. USB 2.0 Port 5	13. USB 2.0 Port 7
2. USB 2.0 Port 0	8. LAN 1 Port	14. Center/LFE Out
3. USB 2.0 Port 1	9. USB 3.0 Port 0	15. Surround Out
4. USB 2.0 Port 2	10. USB 3.0 Port 1	16. S/P DIF Out
5. USB 2.0 Port 3	11. LAN 2 Port	17. Line In
6. USB 2.0 Port 4	12. USB 2.0 Port 6	18. Line Out
		19. Mic In

Removing the Displays



NOTE: The process for removing displays is the same for both dual-screen and single-screen MaxPac8051 systems. The only difference is steps 10 through 12, which are applicable only to dual-screen MaxPac8051 systems.

- 1) Lay the system flat on the table with the displays in the closed position and facing upwards (it is recommended that you lay the system on a protective surface – such as the bubble wrap shown in this example – in order to protect the finish).
- 2) Press the red push button on the Display Port connectors to release them from their secured position as illustrated in (Figure 3-2).



Figure 3-1

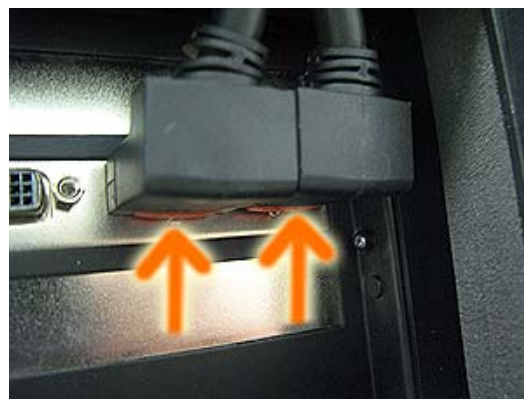


Figure 3-2

- 3) Gently unplug these cables (Figure 3-3).



Figure 3-3



Figure 3-4

- 4) Two XLR connectors are used for display power. These connectors can be unlocked by rotating the fastener in the counter-clockwise position until it releases as illustrated in (Figure 3-4.)
- 5) Gently unplug the two display power cables from the main chassis (Figures 3-4 and 3-5).

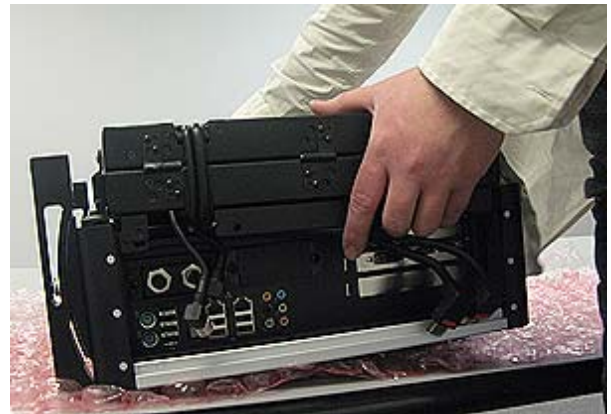


Figure 3-5



Figure 3-6

- 6) Use a Phillips #2 screwdriver to remove the four black button head screws (two on each side of the system) attaching the display assembly to the main chassis (Figures 3-6 and 3-7).


Figure 3-7

Figure 3-8

- 7) Gently lift the display assembly away from the main chassis (Figure 3-8).

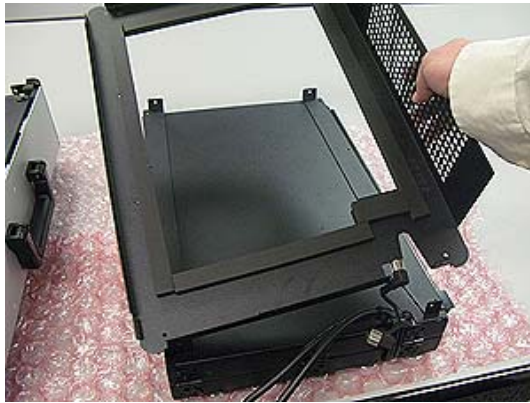

Figure 3-9

- 8) Gently lay the display assembly face-down on the table.
- 9) Remove the video cable retaining bracket as illustrated in Figures 3-9.



Figure 3-11**Figure 3-12**

- 10) Use a Phillips #2 screwdriver to remove the eight screws attaching the protective bezel to the display assembly as illustrated in Figure 3-11 and 3-12 (observe the foam strip running around the outer edge of the back of the assembly – this may slightly obscure the screws, but you can easily slip the tip of the screwdriver between the foam and the flange). Note the two metal strips that are now free to also be removed (Figure 3-14).

**Figure 3-13****Figure 3-14**

- 11) Observe the three hinges linking the two displays together (Figure 3-15). Each hinge has four screws – two per display. Use a Phillips #1 screwdriver to remove three pairs of screws from the portions of the hinges attached to the display you wish to replace.

**Figure 3-15****Figure 3-16**

- 12) Unscrew the knurled knob holding the two displays together (Figure 3-17).



Figure 3-17



Figure 3-18

- 13) Remove the screw that is holding the hinge mechanism on the opposite side of the monitor and lay both screen flat on a protected surface as illustrated in (Figure 3-18 and 3-19).



Figure 3-19

- 14) Exchange the defective display(s) with the replacement unit(s) supplied by MaxVision support, and then re-assemble the system by performing the above steps in their reverse order.

Accessing the Inner Chassis

- 1) Perform steps (1) through (6) – as illustrated in Figures 3-1 through 3-8 in the previous topic – in order to detach the display assembly from the main chassis.
- 2) Gently lift the inner chassis away from the outer chassis (Figures 3-20 and 3-21) and lay it on the desk as illustrated in Figure 3-22.



Figure 3-20



Figure 3-21

- 3) Use a Phillips #2 screwdriver to remove the four countersunk screws attaching the lid to the inner chassis (Figures 3-22).



Figure 3-22



Figure 3-23

- 4) Gently remove the lid from the inner chassis (Figure 3-23).

Memory



Note: Due to the fact that high-end computer systems can experience a host of memory compatibility issues and problems, you should only use replacement and/or additional memory sticks supplied by MaxVision.



Note: In order to obtain the best possible performance from your MacPac system, memory sticks should be used in pairs (128 bit interleaved), with each pair having the same size/capacity. [Systems as supplied by MaxVision will typically come equipped with unbuffered DDR2 memory modules.]



Note: In the event that you begin to experience problems with the memory that is already resident in your MacPac, you must first determine which stick has failed under the direction of MaxVision support.



Note: The BIOS will always report the true amount of physical memory that is present in the system. This may be as much as 256 GB. However, the amount of memory that can actually be "seen" by the system is determined by the main operating system (OS).

With regard to the 32-bit Windows® XP Professional operating system, for example, the maximum amount of memory that will ever be reported in the **System Information** dialog is about 3 GB. By comparison, in the case of the 64-bit Windows XP Professional x64 Edition of the operating system, the **System Information** dialog will accurately report the true amount of physical memory and all of this memory will be available to the applications.

Adding/Replacing Memory Sticks

- 1) Remove the main display assembly and then access the inner chassis as discussed earlier in this chapter.

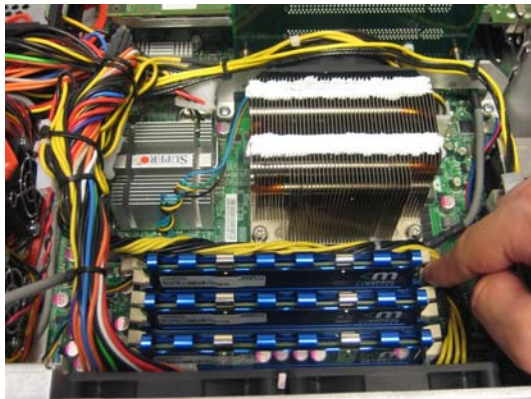


Figure 3-24



Figure 3-25



Note: The six DDR3 slots are divided into two sets of three: one set is blue and the other set is black. If you are using only one to three memory sticks, it is important to utilize the blue slots first.

- 2) In order to remove and replace a memory stick, gently press down-and-out on the two plastic "rabbit-ears" at either side of the stick which will cause it to pop out, and then remove the stick from the system (Figures 3-24 and 3-25).
- 3) Take the memory provided by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

PCI Express Card

- 1) Remove the main display assembly and then access the inner chassis as discussed earlier in this chapter.
- 2) Remove the upper PCI card if present. Most systems will not have PCI card above the PCI Express graphics card. **(NOTE: The PCI Card and Riser Card may appear different depending on your configuration.)**
- 3) Prior to removing the PCI Express card the perforated cover must be removed as illustrated in Figures 3-26 and 3-27. This cover provides pressure to the top of the PCI Express Graphics card to help hold the card fully seated into the PCI Express slot.



Figure 3-26



Figure 3-27

- 4) Use a Philips #2 screwdriver to remove the screw attaching the card's retaining bracket to the inside of the inner chassis (Figure 3-28).
- 5) Gently pull the rear latch to disengage the PCI Express card from the riser assembly while pulling the PCI Express card out of its slot in riser assembly (Figure 3-29).



Figure 3-28

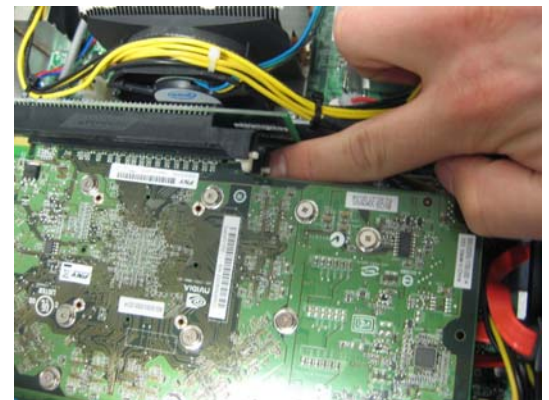


Figure 3-29

- 6) Some PCI Express cards may have an auxiliary power connector. If so, disconnect it as shown in Figure 3-30.

- 7) Take the new PCI Express card provided by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

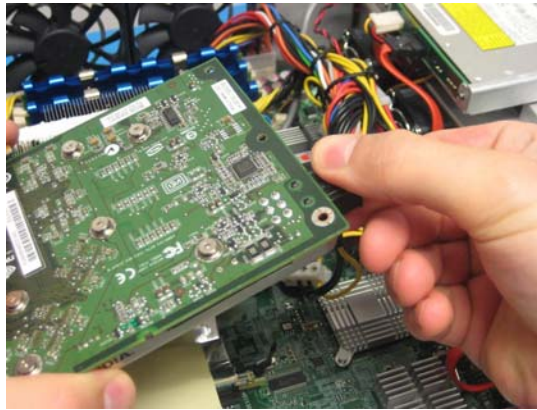


Figure 3-30

Riser Assembly

- 1) Remove the main display assembly and then access the inner chassis as discussed earlier in this chapter. **(NOTE: The riser card may look different or have different slots depending on your configuration.)**
- 2) Remove the PCI Express card and any PCI cards as discussed earlier in this chapter.
- 3) Remove any cable ties securing the power supply wires to the riser bracket as illustrated in Figure 3-31.
- 4) Use a Philips #2 screwdriver to remove the two screws attaching the riser assembly to the inner chassis as illustrated in Figures 3-32 and 3-33.

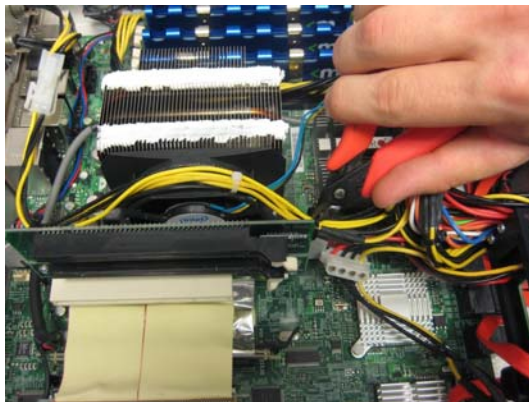
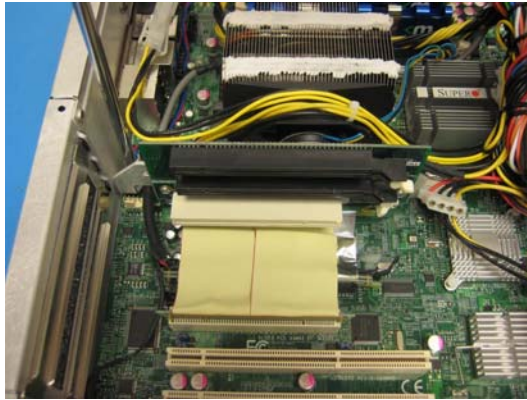
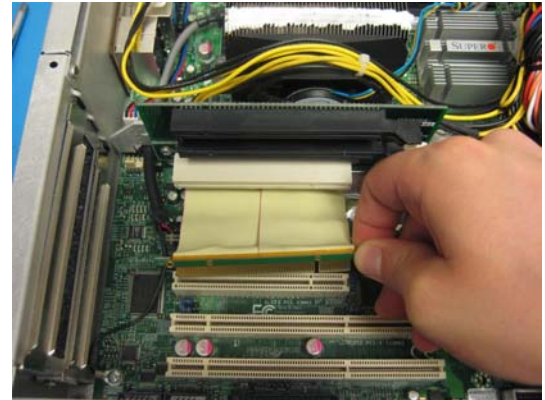


Figure 3-31



Figure 3-32

- 5) Remove the PCI Paddle cards from the motherboard PCI slots (Figure 3-34).

**Figure 3-33****Figure 3-34**

- 6) Release the motherboard PCI Express connector latch (Figure 3-35) to remove the PCI Express paddle card. Release the motherboard PCI Express while removing the riser assembly (Figures 3-36 and 3-37)

**Figure 3-35****Figure 3-36****Figure 3-37**

- 7) Take the new riser assembly provided by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.

Main System Cooling Fans

- 1) Remove the main display assembly and then access the inner chassis as discussed earlier in this chapter.
- 2) Remove the four #2 screws from each of the two fans as illustrated in Figure 3-38. The two fans are attached together as a set. Gently lift the fan assembly away from the inner chassis as illustrated in Figure 3-39.



Figure 3-38

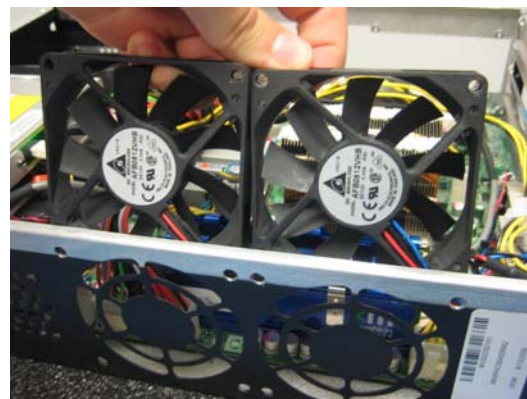


Figure 3-39

- 3) The fan assembly is attached to the motherboard by its power cable. Detach this connector so that the fan set can be removed as illustrated in Figure 3-40.

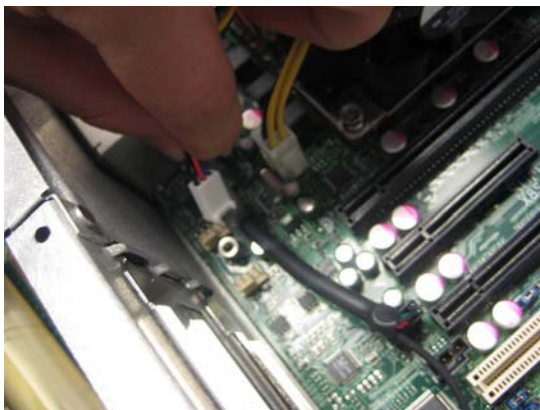


Figure 3-40

- 4) Take the new fan assembly provided by MaxVision support and incorporate it into the system by performing the steps described above in reverse order.



Appendix A: Creating and Using Backup Images (Including Restoring Your OS)

Introduction

Every MaxVision system comes equipped with a *MaxVision Recovery DVD*. In addition to an image of your operating system, this disc also contains a copy of the *Acronis True Image™* application from Acronis (www.acronis.com). *Acronis True Image* is a superb tool for operating system (OS) deployment, software distribution, back-up, and disaster recovery. In particular, this utility allows you to make reliable backups of your system drives, including applications and critical data. There are two primary scenarios that need be considered as follows:

Restoring the MaxVision-supplied Image



This is the worst-case scenario. It assumes that your system has undergone some catastrophic failure such that – under the direction of MaxVision support – you are going to replace your primary hard drive(s) and/or restore the original MaxVision-supplied image. In this case, you will lose any applications and data that you have installed, loaded, or created on your main “C:” drive/partition.

Note: If you do re-load the original MaxVision-supplied image, you will also have to re-run the initialization procedures – including re-activating/re-registering your OS license – as described earlier in this manual.

- 1) Power-down the system.
- 2) Ensure that the bootable recovery DVD supplied in the accessory pack is in the system's CD/DVD drive.
- 3) Power-up the system. This will automatically launch the Acronis application as shown in Figure A-1.



Figure A-1

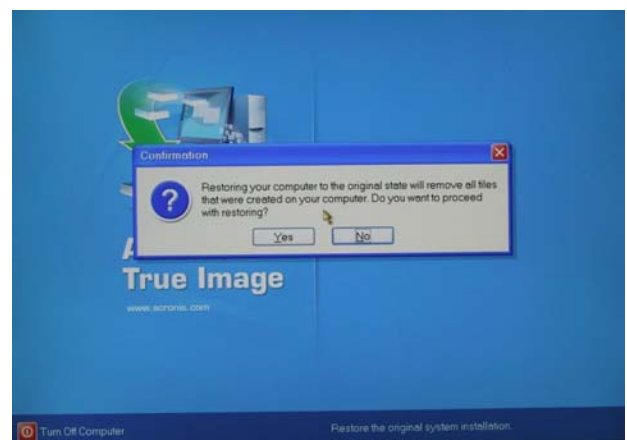


Figure A-2

- 4) Select Yes in the dialog shown in Figure A-2 to allow Acronis to completely restore your disk.

- 5) Figures A-3 and A-4 show the completing steps for restoring you image back to the MaxVision configuration as originally shipped.

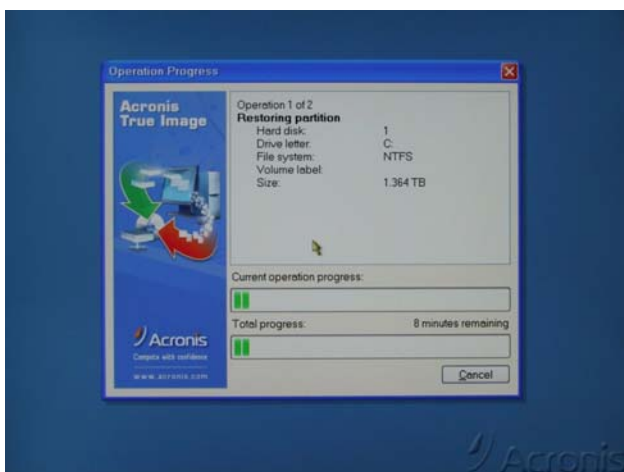


Figure A-3



Figure A-4

Creating Your Own Image

This scenario assumes that you have added new applications, loaded or created new datasets, and generally configured and customized your MaxVision system the way you like it. At this stage, before you deploy the system, it is strongly recommended that you use the *Acronis True Image* application to create an image of the system. Similarly, as you add additional applications or generate additional datasets, it is strongly recommended that you create periodic backup images. This greatly facilitates your ability to return the system to a “known good state” should any problems arise (such as a virus attack or a hard drive failure) at some stage in the future.

For the purposes of this example, we will assume that you are writing your image to CD media (as opposed to DVD), and that the image will occupy two CDs.

- 1) Power-down the system.
- 2) In this case you will need to create your own Acronis Recovery bootable DVD media from the Acronis Windows application.
- 3) Ensure that the bootable recovery DVD supplied in the accessory pack is in the system's CD/DVD drive. In the case of a multiple DVD image, ensure Disk #1 is in the drive.
- 4) Power-up the system. This will automatically launch the Acronis application as shown in Figure A5. Use the mouse to select the Acronis item as shown in Figure A-5.



Figure A-5



Figure A-6

- 5) Following the splash screen (Figure A-6), under the **Pick a Task** heading, select the **Backup** option (the top item) as illustrated in Figure A-7.

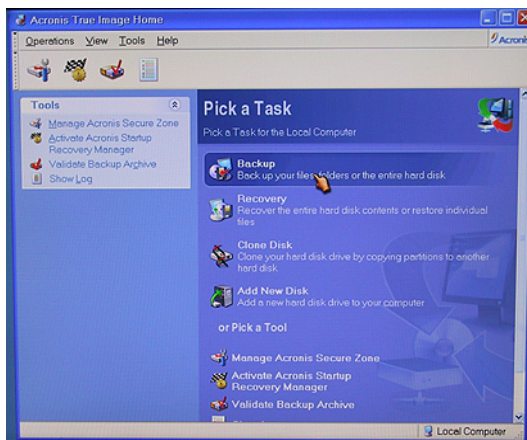


Figure A-7

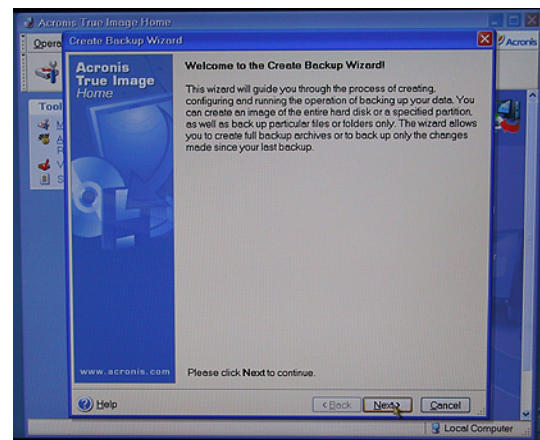


Figure A-8

- 6) Follow the actions depicted by the screenshots shown in Figures A-8 through A-22.

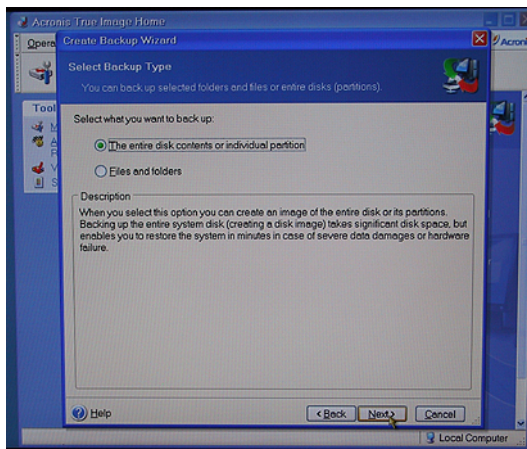


Figure A-9

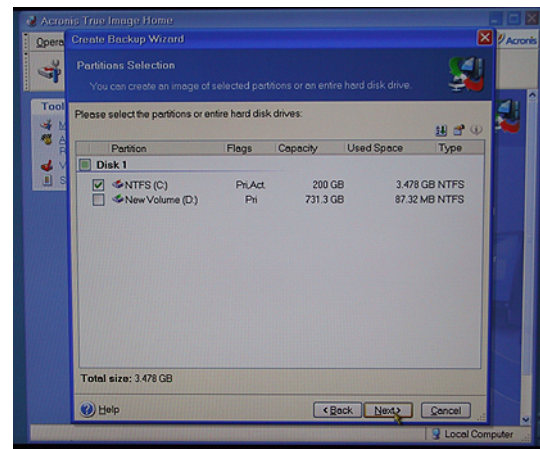


Figure A-10

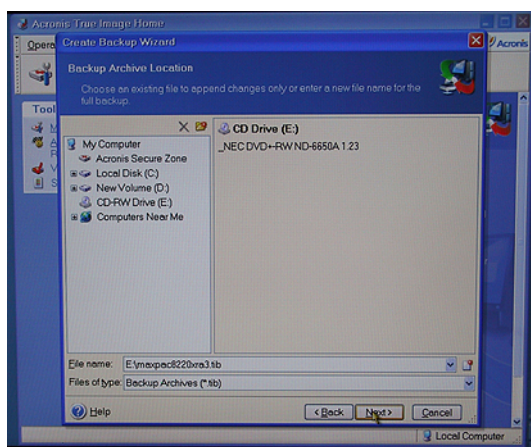


Figure A-11

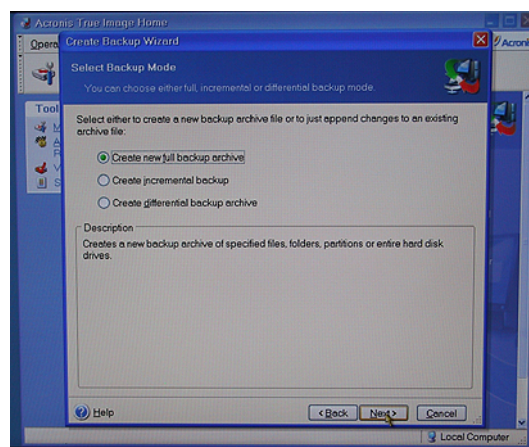


Figure A-12

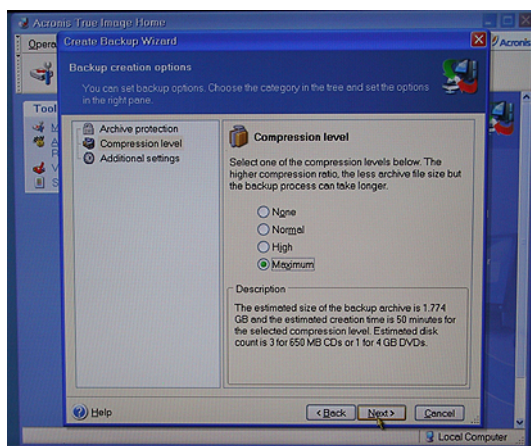


Figure A-13

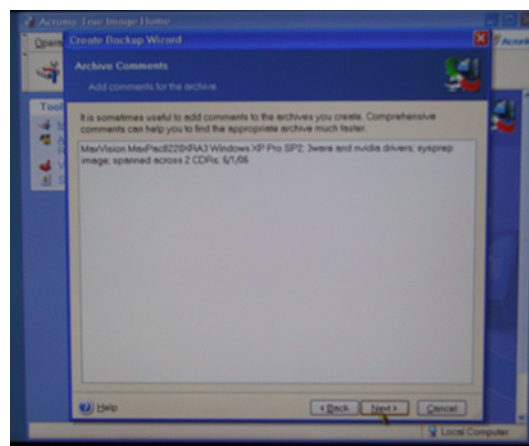


Figure A-14

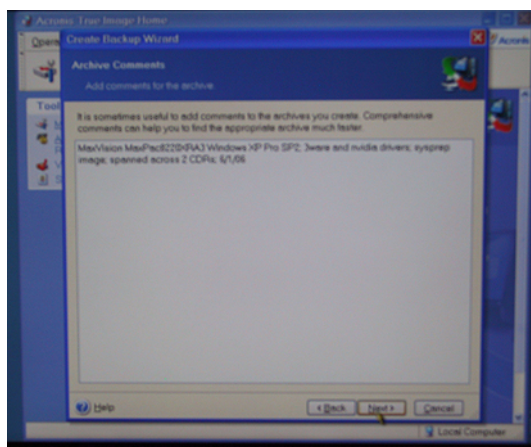


Figure A-15

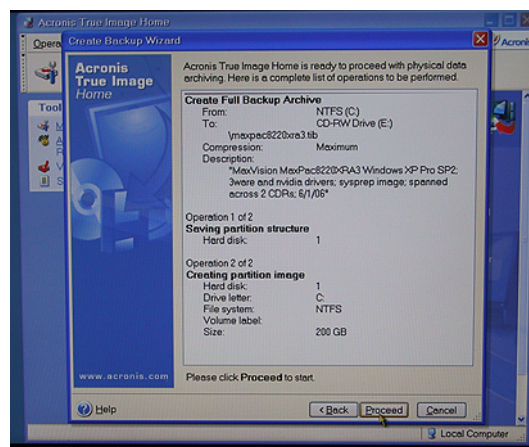


Figure A-16

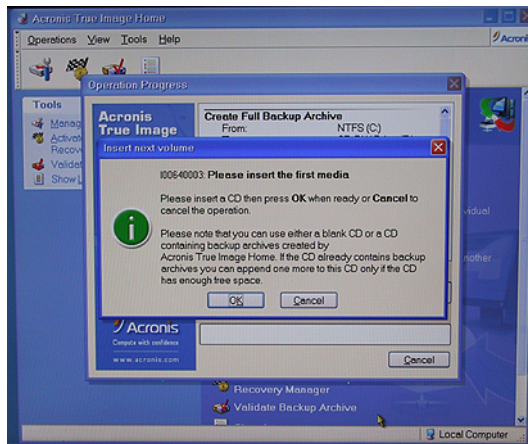


Figure A-17

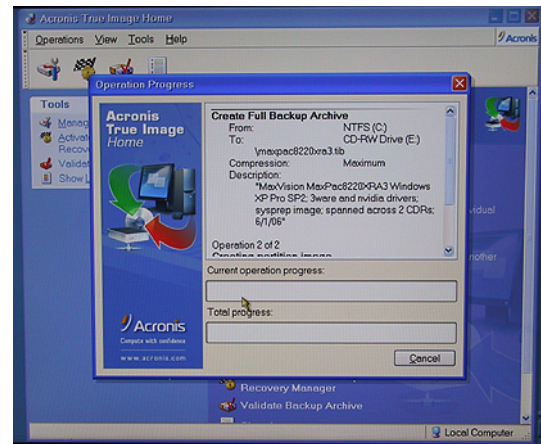


Figure A-18

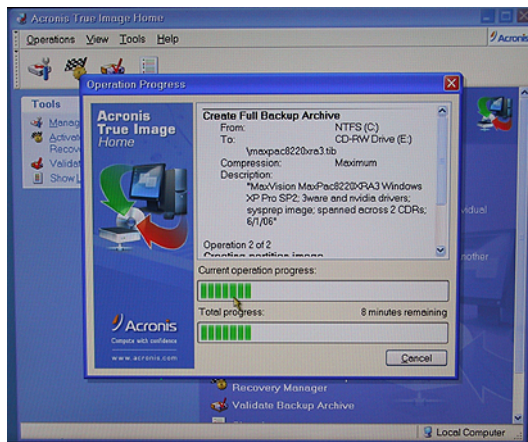


Figure A-19

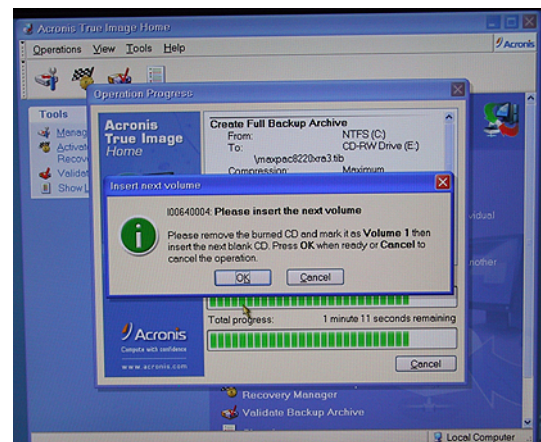


Figure A-20

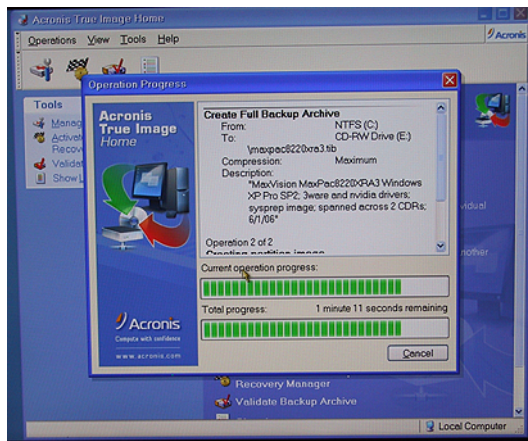


Figure A-21

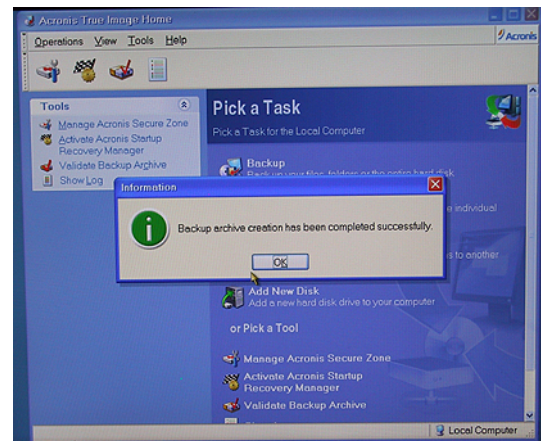


Figure A-22

Restoring Your Own Image



Note: If you do re-load an image (containing the OS) that you have created yourself following your original activation and registration of the OS, you will NOT be required to re-activate and re-register the OS so long as you are restoring the image to the original machine. However, you will be required to re-activate and re-register the OS if you re-load the image onto a different machine. Prior to shipment from MaxVision the Microsoft SYSPREP utility is used to clear out the license number and other settings following system test. If you create your own image, and if SYSPREP is not run, and you subsequently load your image onto another MaxPac system, then Microsoft will require activation before use (no 30 day grace period). At this time, you will need to supply the correct OS license number for the MaxPac and activate prior to use (this procedure may vary depending on the version and license type of Windows used).

For the purposes of this example, we will assume that you are restoring your image from CD media (as opposed to DVD), and that the image occupies two CDs.

- 1) Power-down the system.
- 2) Ensure that the bootable recovery DVD supplied in the accessory pack is in the system's CD/DVD drive. In the case of a multiple DVD image, ensure Disk #1 is in the drive.
- 3) Power-up the system. This will automatically launch the Acronis application as shown in Figure A-23. Use the mouse to select the Acronis item as shown in Figure A-23.



Figure A-23



Figure A-24

- 4) Following the splash screen (Figure A-24), under the **Pick a Task** heading, select the **Restore** option (the top item) as illustrated in Figure A-25.
- 5) Follow the actions depicted by the screenshots shown in Figures A-25 through A-43.



Figure A-25

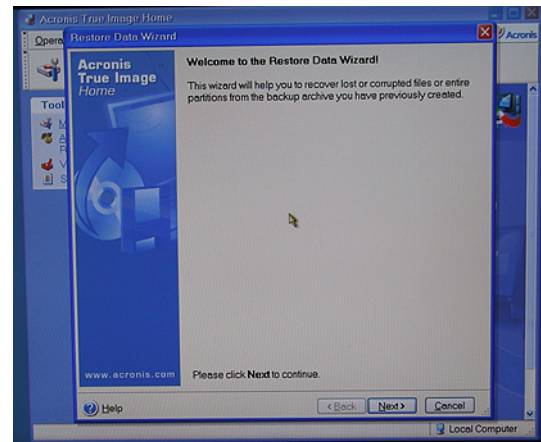


Figure A-26

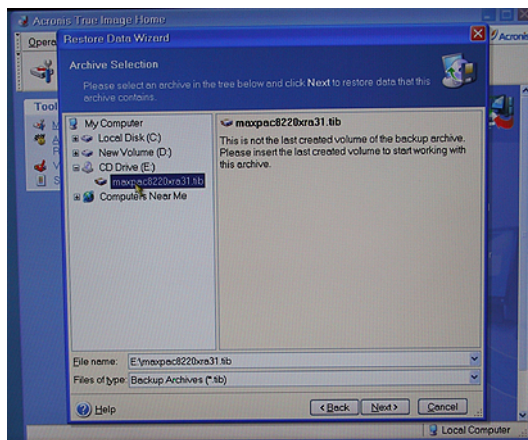


Figure A-27

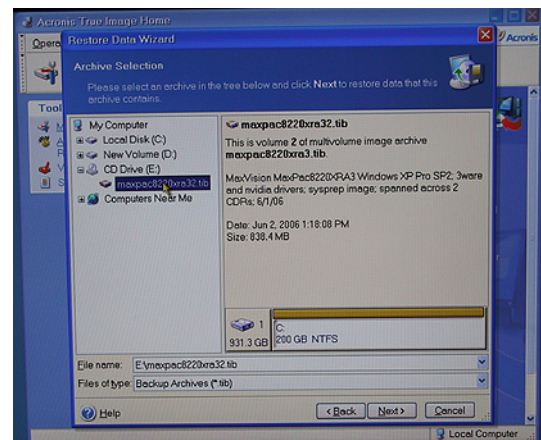


Figure A-28

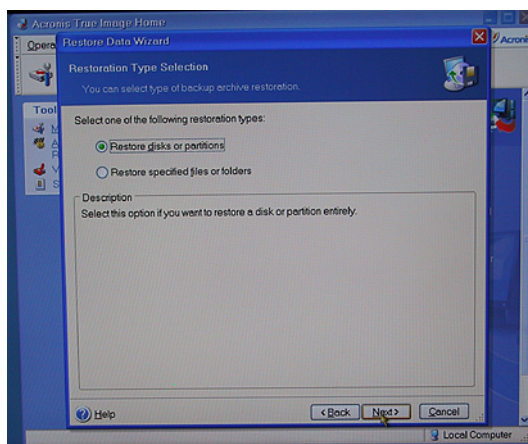


Figure A-29

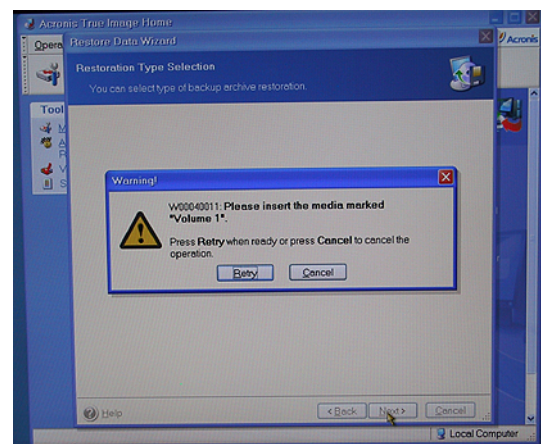


Figure A-30

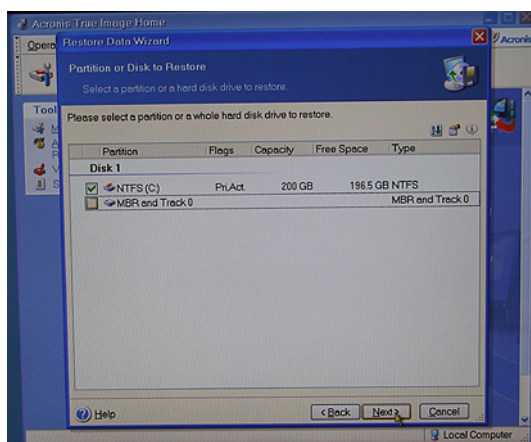


Figure A-31

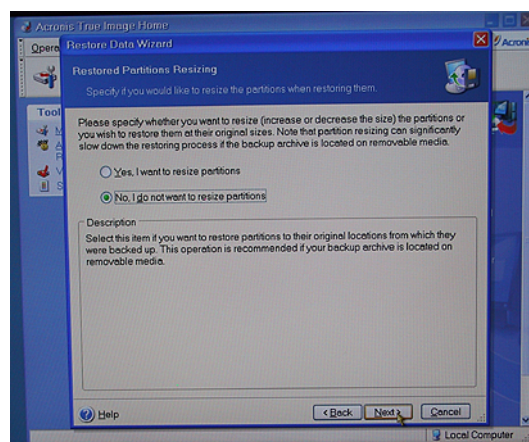


Figure A-32

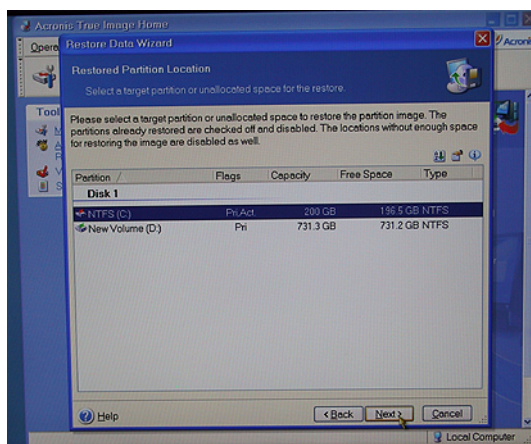


Figure A-33

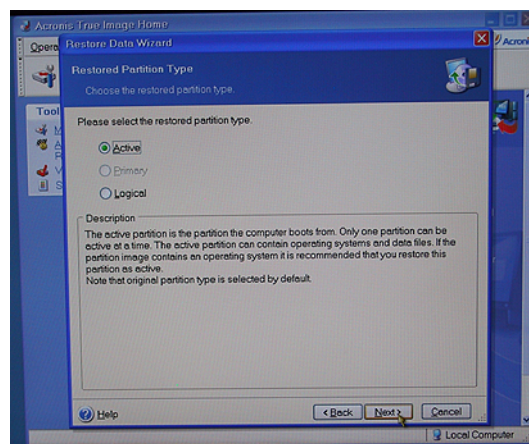


Figure A-34

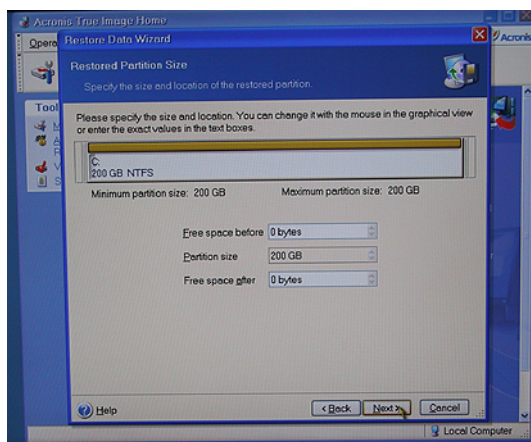


Figure A-35

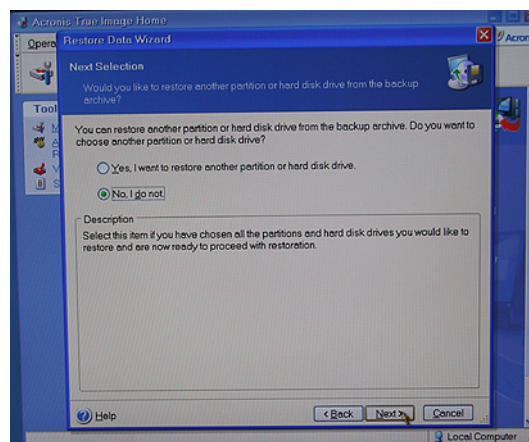


Figure A-36

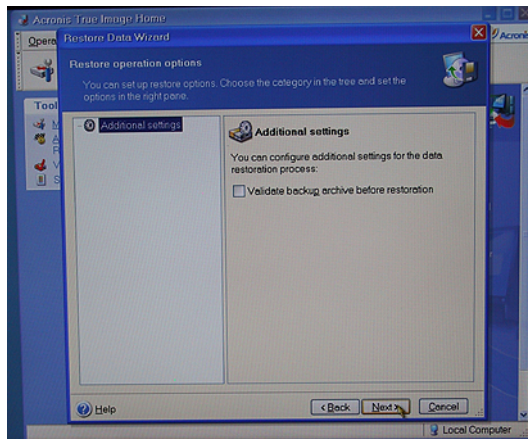


Figure A-37

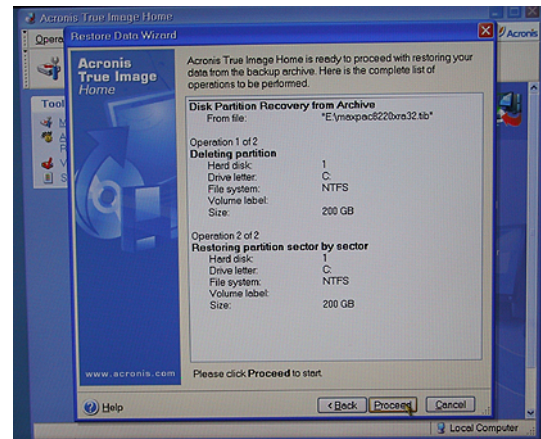


Figure A-38

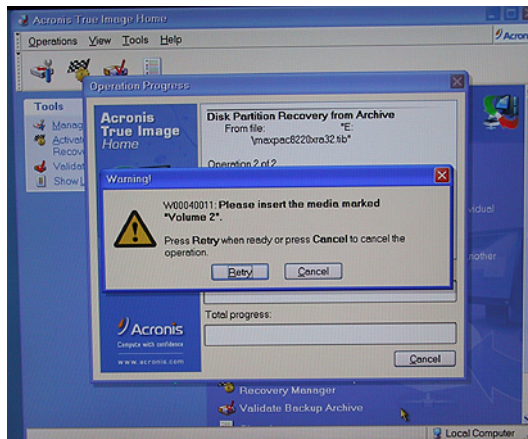


Figure A-39

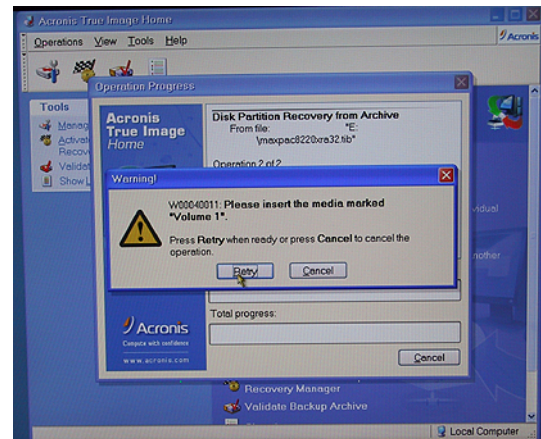


Figure A-40

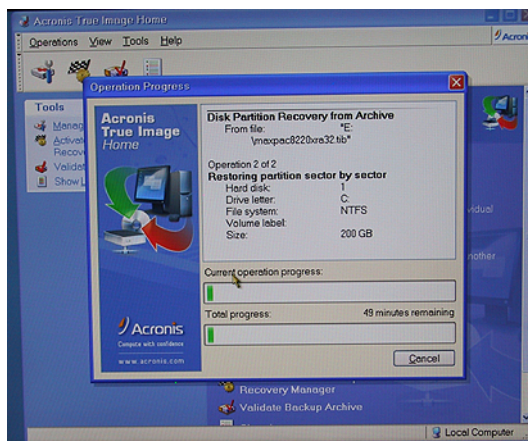


Figure A-41

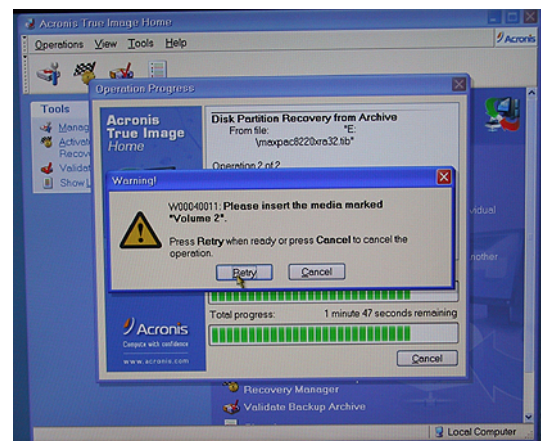


Figure A-42

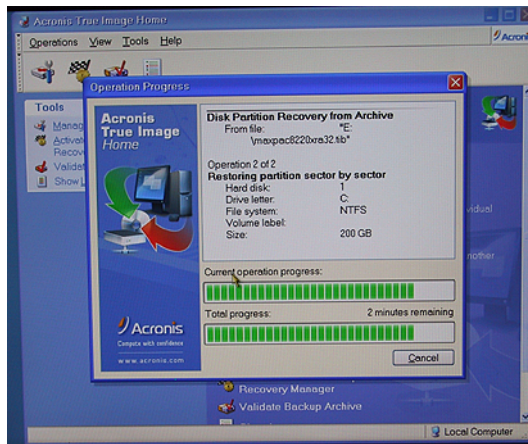


Figure A-43

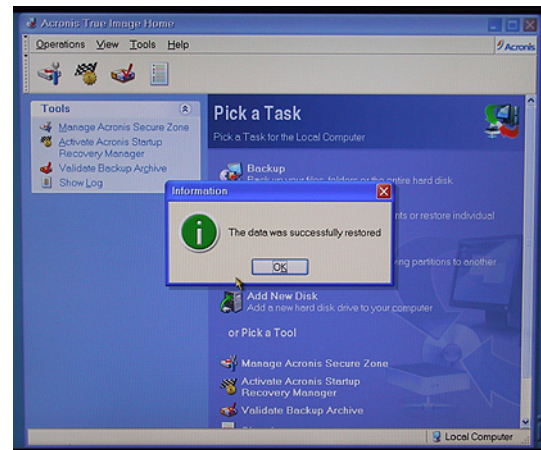


Figure A-44

Appendix B: Regular System Maintenance

Cleaning Interior Dust

You should periodically check your system for the presence of interior dust and clean the enclosure as required. The frequency of such checks will be strongly dependent on your situation. Perhaps not surprisingly, systems deployed in a desert environment, for example, will typically require such cleaning more often than systems located in less rigorous settings. Having said this, even in harsh environments, it should not be necessary to clean the system interior of dust very often so long as you maintain your "Desert Filter" as discussed below.

In order to clean the interior you should perform the following steps:

- Shut down the system and unplug the power cord.
- Remove the main display assembly and then access the inner chassis as discussed in Chapter 3.
- Using a commercially available compressed air PC cleaning product, blow the accumulated dust out of the unit. Pay special attention to air passages, grills, and heat sinks.
- Close up the system.

Maintaining (Cleaning) the "Desert Filter"

- 1) Observe the filter on the rear of the main chassis (Figure B-1). This filter is located over the air intake vents (any uncovered fans act as exhausts).



Figure B-1



Figure B-2

- 2) The filter is attached to the main chassis using four knurled knobs. Unscrew these knobs and gently pull the filter away from the system as illustrated in Figure B-2.
- 3) The filter should be cleaned as mandated by local conditions (a good rule of thumb is to clean the filter when it looks physically dirty).

- 4) Separate the filter element from its frame, and then place the filter element on a working surface that is protected by some form of absorbent, disposable material (Figure B-3).

Note: As illustrated in Figure B-3, The filter recharge kit (MaxVision Part Number 228-0002-0) comprises a pump spray cleaner and an aerosol spray containing replacement oil. MaxVision Part Number 228-0003-0 comprises a pump spray cleaner and an pump spray containing replacement oil.



Figure B-3

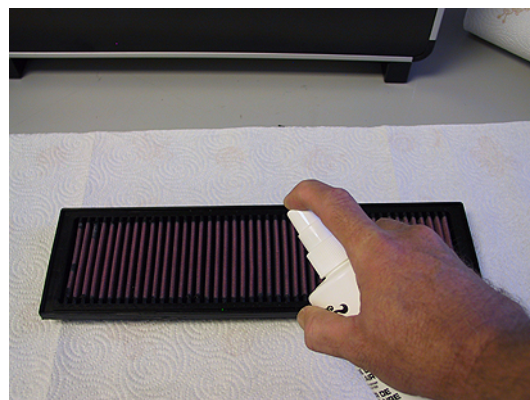


Figure B-4

- 5) It is recommended that you first tap the filter element on the work surface to dislodge any large embedded dirt particles, and then gently brush it with a soft bristle brush. Next, spray the cleaner onto both sides of the filter element (Figure B-4), leave for ten minutes, and then rinse the element using a low-pressure water source (tap water is OK).



Note: Always apply the water from the "clean" side of the filter element.



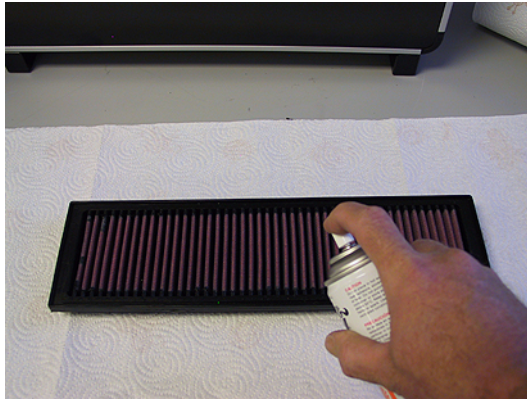
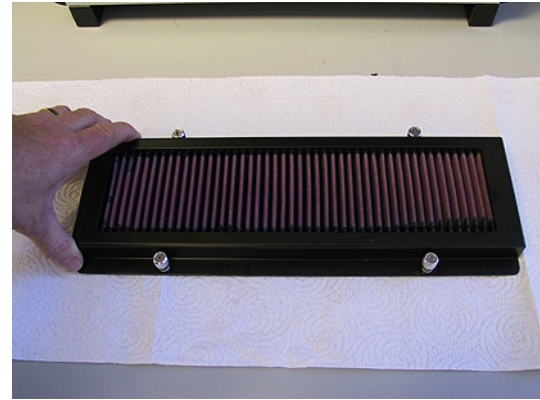
Note: The use of other cleaning materials (including high-pressure air) may damage and/or reduce the effectiveness of the filter element.

- 6) Shake off any excess water and then let the filter element dry naturally.
- 7) Spray replacement oil on the "dirty" side of the filter element (Figure B-5). Keep the nozzle about three inches from the filter. Note that the cotton in the filter element will absorb and distribute the oil into an even film; thus, it is important to use only a single pass for each area of the filter and to not over-spray the filter.



Note: The filter oil is a compound of mineral and animal oil blended with special polymers to form a very efficient barrier. Red dye is added to show just where you have applied the oil (this red color will eventually fade, but the oil will remain and filter the air).

- 8) Let the filter stand for 20 minutes and then touch-up any spots that do not visibly show the red dye contained in the oil.


Figure B-5

Figure B-6

- 9) Bring together the elements forming the filter assembly (Figure B6).
- 10) Reattach the filter assembly to the main chassis using the four knurled knobs.

Resetting the Motherboard BIOS

In the event that your motherboard BIOS is corrupted or lost completely (this could be caused by failure of the lithium battery, electrostatic discharge, a major power surge, or user error), you may reset the BIOS as follows:

- 1) Power the system down completely (a simple **Start > Turn Off Computer > Restart** command is typically NOT recommended or sufficient) and then initiate the power-up sequence as discussed in Chapter 1.
- 2) Due to extensive system initialization and verification checks, the BIOS boot-up process can take a significant amount of time, especially in the case of systems with large amounts of memory. It can take 45 seconds before all three LEDs above the numerical keypad on the keyboard flash. This is your cue to enter the BIOS setup utility, which you achieve by pressing the key on the keyboard. Note that the system may not immediately respond to your pressing this key, which may be buffered until higher priority initialization tasks have been completed. Once the system does respond to this key, you will be presented with the **System Overview** screen of the **BIOS Setup** (Figure B-7).


Figure B-7

- 3) Depress the F3 key to load optimal defaults.
- 4) Use the arrow keys to select the Advanced section.
- 5) Use the arrow keys to select the SATA Configuration menu (Figure B-9). Arrow down to SATA Mode and press Enter to select AHCI mode or RAID Mode (Figure B-10). Contact MaxVision Technical Support if you are unsure if your machine is setup for RAID or AHCI.

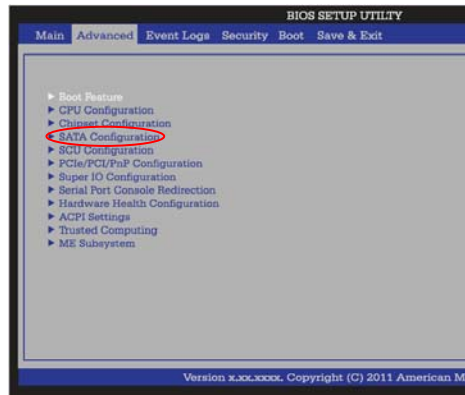


Figure B-9

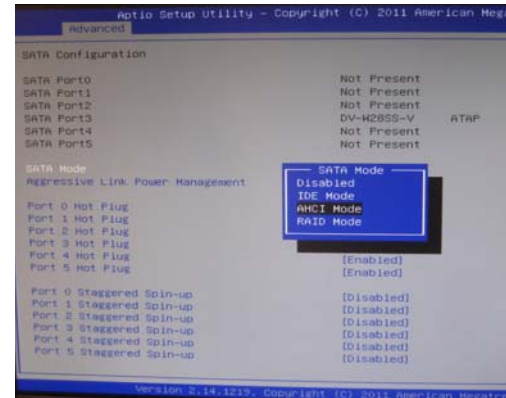


Figure B-10

- 6) Use the arrow keys to select the Boot Features section under the Advanced Menu (Figure B-11).
- 7) Use the arrow keys to select the Power Button Function and set it to "4 Seconds Override" (Figure B-12).

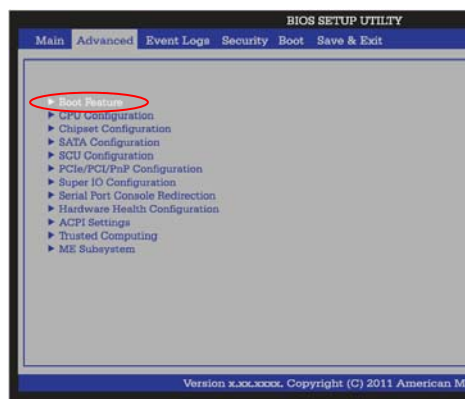


Figure B-11

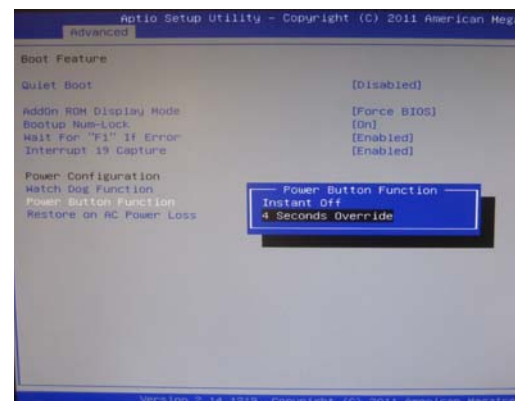


Figure B-12

- 8) In the same menu, arrow to "Quiet Boot" and set it to "Enabled" so that you may see details on screen while the unit is booting. (Figure B-13)
- 9) In the same menu, arrow down to "Restore on AC Power Loss" and set it to "Stay Off". This will ensure that the unit will not power cycle excessively in the case of intermittent power.

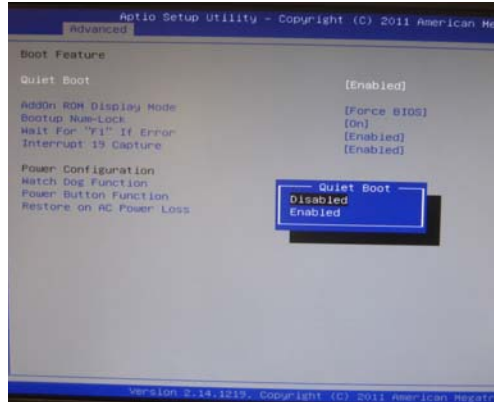


Figure B-13

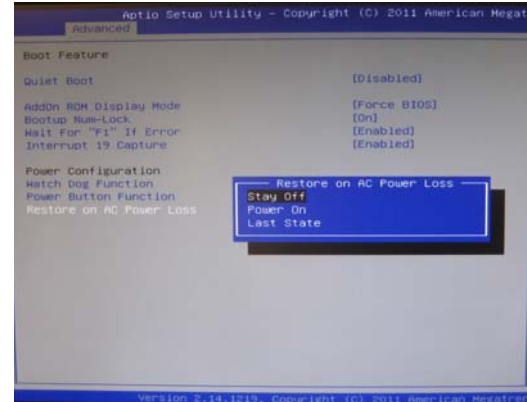


Figure B-14

- 10) Press the <F4> key to save and exit the BIOS. This will cause a confirmation form to appear on the screen. Use the arrow keys to highlight the **OK** option, and then press the <Enter> key to save your changes to CMOS and exit the BIOS Setup utility.

Replacing the Lithium Battery

A Lithium Ion battery is included with the system motherboard. This battery is used for the Real Time Clock circuit. The expected lifetime of the battery is approximately 5 years.

There is a danger of explosion if this battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the motherboard manufacturer. Dispose of used batteries according to the manufacturer's instructions.

In order to replace the lithium battery you should perform the following steps:

- 1) Shut down the system and unplug the power cord.
- 2) Remove the main display assembly and then access the inner chassis as discussed in Chapters 3 and 4.
- 3) Remove and replace the lithium battery according to the manufacturer's instructions.
- 4) Close up the system.

Appendix C: Screws and Required Tools

Screws

The various screws used in a MaxPac 9200 SRA2 S-Class system are illustrated approximately full size as shown in Figure C-1

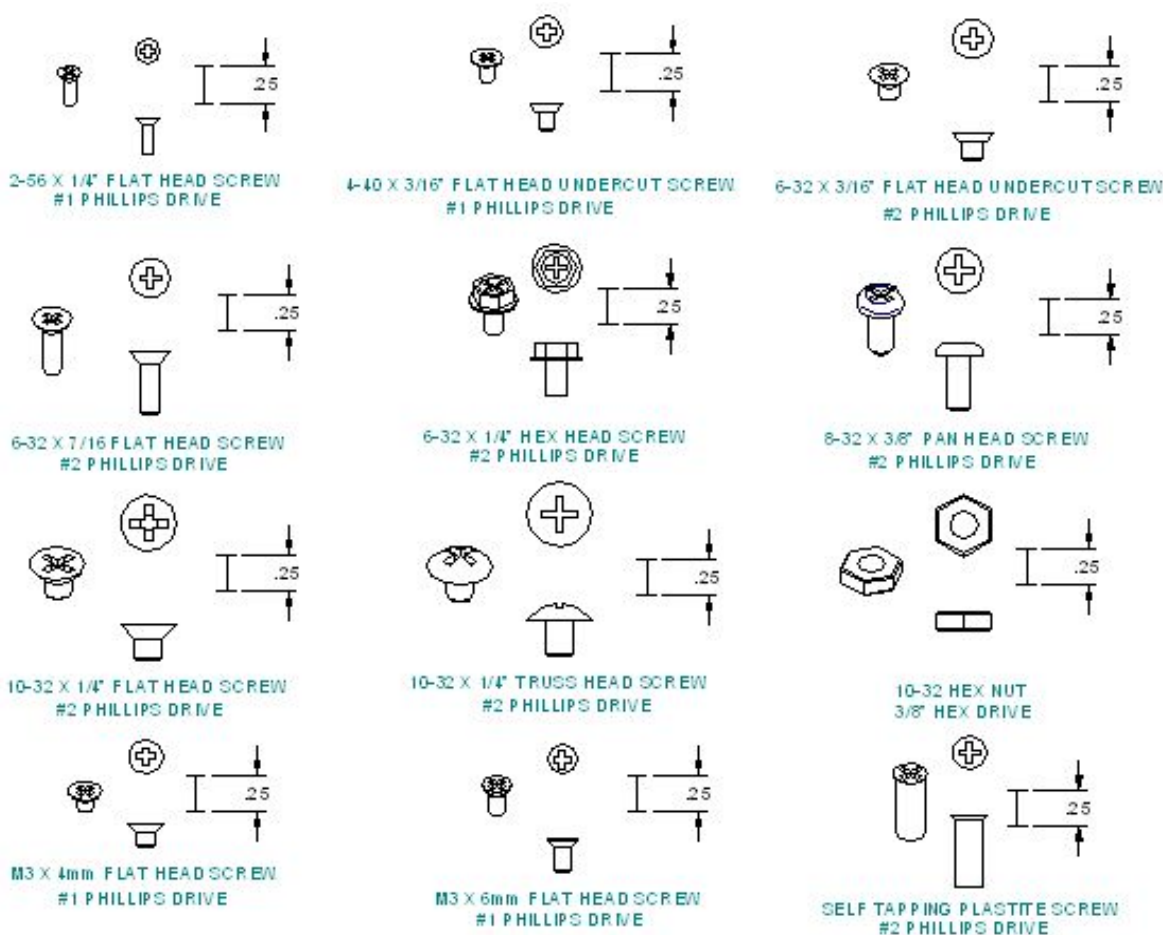


Figure C-1. Screws used in MaxPac 8051 SRA1/2 S-Class systems

Required Tools

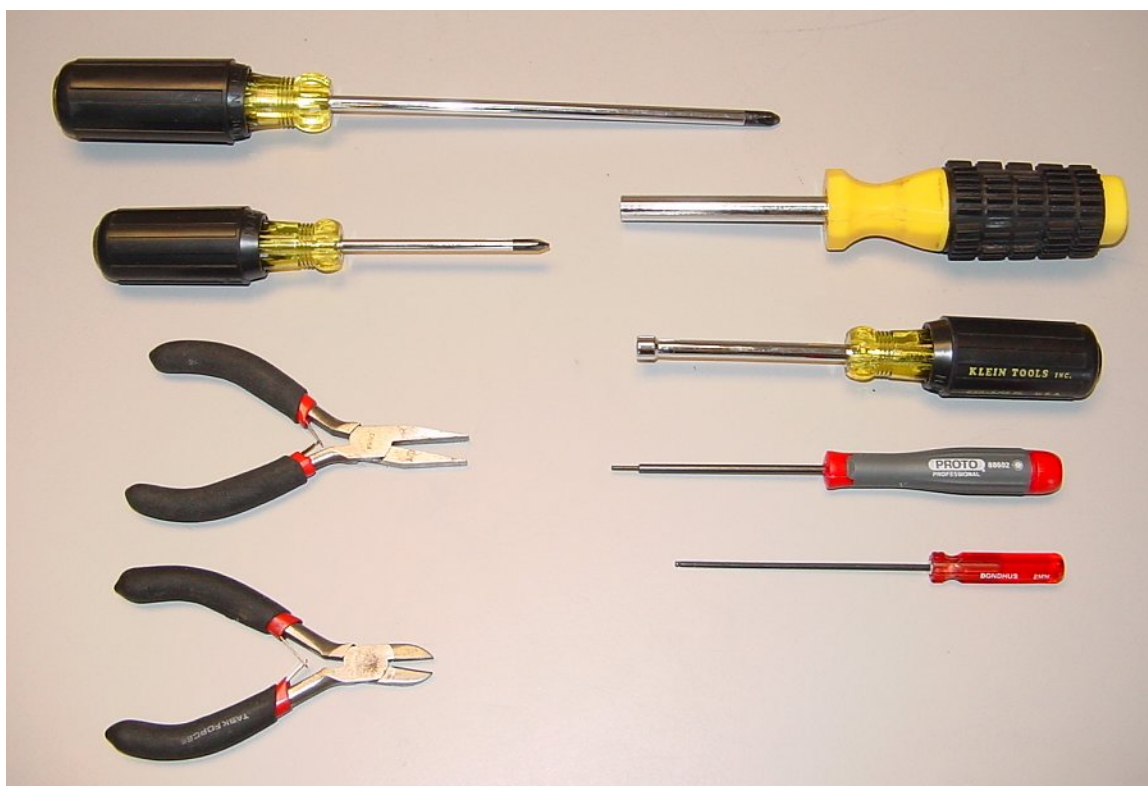


Note: It is extremely important that you use only high-quality tools so as to avoid any slippage and stripping of screw heads and threads.



Note: It is highly recommended that you use magnetized screwdrivers so as to prevent screws from dropping inside the case and/or aiding in retrieving them if they do drop inside the case. (If your screwdriver isn't already magnetized, you can make it so by repeatedly "stroking" the blade with a permanent magnet. Using a high quality universal screwdriver with replaceable Phillips #1 and #2 bits is a good idea to ensure that your bits are always in excellent condition.

Most of the module replacement and upgrade procedures discussed in this chapter can be performed using only a pair of #1 (small tip) and #2 (regular tip) Phillips screwdrivers.



For some procedures, however, needle-nose pliers will be of use, and you may have to cut cable ties on occasion.

Appendix D: Contacting MaxVision Support (RMA and Serial Numbers)

Repairing/Replacing Products/Accessories

MaxVision will repair or replace products/accessories due to defects in material or workmanship, or any failure of the hardware system to conform to written specifications. Warranty repairs will be performed at MaxVision's service center. Any replacement parts/products shall be new or refurbished. Any repaired or replaced product will not extend the original warranty term of the product. Additionally, this warranty period will not be extended as a result of the purchase of any additional parts/products from Rugged Portable Computers LLC.

Contacting Technical Support and RMA Numbers

During the warranty period, MaxVision will provide technical support for hardware diagnosis via email (maxvision.support@maxvision.com or support@maxvision.com) or the technical support and customer service hotline (800-533-5805). If MaxVision's technical support determines that the product is defective, MaxVision will issue a *Return Material Authorization (RMA)* number to the customer. The customer is required to ship the product referencing the RMA number on the outside of the original (or equivalent) packaging with a copy of MaxVision's RMA form if provided. The return shipment must be sent insured and prepaid to:

Rugged Portable Computers LLC
495 Production Avenue
Madison, AL 35758
USA

Attn: Support

MaxVision will ship the repaired or replaced product to the customer with freight prepaid if the customer's address is within United States of America (excluding Alaska, Hawaii, Puerto Rico and U.S. possessions). Shipments to other locations will be shipped at the customer's expense. MaxVision must receive notice of all events before the warranty period expires. NOTE: MaxVision will not be responsible for data on the hard-disk drive. Before you ship the product(s) to MaxVision, please back up your data from the hard-disk drive(s) or any other storage device(s) in the product(s).